



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/629,219	07/31/2000	Lior Shabtay	3-7	3977

7590

05/20/2004

JOSEPH B. RYAN
RYAN, MASON & LEWIS, LLP
90 FOREST AVENUE
LOCUST VALLEY, NY 11560

EXAMINER

LEE, TIMOTHY L

ART UNIT	PAPER NUMBER
----------	--------------

2662

DATE MAILED: 05/20/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/629,219

Applicant(s)

SHABTAY ET AL

Examiner

Timothy Lee

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 20-43 and 45-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 20-43 and 45-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-17, 20-43, and 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gleeson et al. (US 5,959,989) in view of Virgile (US 5,898,686).
2. Regarding claims 1, 2, and 48, Gleeson et al. discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network. Fig. 2A shows a block diagram of a computer network 200. The network includes a plurality of local area networks 204-214—each of these LANs can be considered a “segment” of a larger land (dividing the LAN to a number of segments). See col. 7, lines 50-59. Intermediate devices 220-223 are capable of establishing segmented virtual local area networks (VLANs) by associating various groups of LANs 204-214. See col. 8, lines 4-8. If LAN segments make up the VLANs, then there must be more segments than VLANs (segments larger than the number of VLANs in the network). Gleeson et al. does not expressly disclose a multicast table which relates to each of the segments. Virgile et al. discloses a table 200 as shown in Fig. 4. The multicast destination address index field contains a multicast destination address of a particular multicast group. See at least col. 7, lines 50-60. It would have been obvious to a person of ordinary skill in the art at the time of the invention to include information

Art Unit: 2662

from a multicasting table of the LAN segments as disclosed by Virgile in the VLAN table disclosed by Gleeson et al.. One would have been motivated to do this because if the network configuration was to change, it would be reflected in the table, and the router would not have to send packets to a destination that no longer existed, making the system more efficient.

3. Regarding claim 2 more specifically, the purpose of the table in Virgile is so that the packets that match the entries in the table will be routed to the correct destination.

4. Regarding claim 3, Gleeson et al. discloses that the VLAN designation table associates each port of the device with the VLAN designation. See col. 8, lines 19-23.

5. Regarding claim 4, Gleeson et al. discloses identifying subscribing VLAN ports in the forwarding table 250. The group forwarding table preferably associates each group multicast address with the VLAN designations of the subscribing entities and the port numbers used to reach those entities (legal interface). See col. 10, lines 22-34.

6. Regarding claim 5, as shown in Fig. 2A, some of the LAN segments are different physical places from the other LAN segments. For example, LAN 204 and LAN 212 are not in the same physical location.

7. Regarding claim 6, Gleeson et al. discloses dividing VLAN Orange (O) of the LAN into a plurality of segments on LANs and trunk lines 207, 230, 232, 234, and 210 in Fig. 2A.

8. Regarding claim 7, as shown in Fig. 2A, the different LAN segments with 2 or more hosts connected are all connected on different segments.

9. Regarding claim 8, Gleeson et al. discloses that a backbone segment such as 230 in Fig. 2A that includes all the links for each VLAN that connects switches 220 and 221. Gleeson et al. discloses that external ports are used on 230 implies this backbone segment.

Art Unit: 2662

10. Regarding claim 9, Gleeson et al. discloses that each VLAN can be divided such that non backbone segments connect one or more hosts to each layer-3 switch, such as 208 in Fig. 2A that connects 3 hosts in the Green VLAN to layer-3 switch 221.

11. Regarding claim 10, Gleeson et al. discloses making the determination whether to distribute messages in that particular VLAN segment. See col. 11, lines 27-42.

12. Regarding claim 11, Gleeson et al. discloses that the multicast management conforms to IGMP. See col. 8, line 63.

13. Regarding claims 12 and 13, it is inherent that the layer-3 switches, the MNDs 226 and 228, will not perform layer-2 switching, which is done by intermediate devices 220-223. See col. 7, lines 50-59.

14. Regarding claim 14, Gleeson et al. discloses the MND is a multicast router. See col. 7, lines 50-59. The MND 226 in Fig. 2A is also connected to switches 220 and 221, which can be considered layer-2 devices. As an example, device 221 can receive a multicast packet through port 4 (receiving a multicast packet by the switch through a first physical port on a first VLAN). The packet can then be routed to the MND 226 through the bridge 231 that connects the layer-2 switch to the layer-3 router (where the multicast packet is bridge in layer-2 through a third physical port of the layer-3 switch).

15. Regarding claim 15, Gleeson et al. discloses decrementing the TTL. See col. 13, line 52.

16. Regarding claim 16, as shown in Fig. 2A, port 2 on device 221 leads to a layer-3 router.

17. Regarding claim 17, as shown in Fig. 2A, the connection between port 1 of device 221 and port 3 of device 220 is not bridged.

Art Unit: 2662

18. Regarding claims 20 and 23, the path from port 2 of device 221 to port 2 via port 1 of MND 226 constitutes "routing the multicast packets in layer-3 to a second switch through an interface included in the VLAN." The multicast packet can originate from ports 4 or 5 (receiving the multicast packets by a first switch connected to the VLAN).

19. Regarding claim 21, as shown in Fig. 2A, the packet can be routed to the host 33.

20. Regarding claim 22, as shown in Fig. 2A, the packets can then be routed to a third switch, like 222 or 220.

21. Regarding claim 24, the first MND 226 is connected directly to host 33.

22. Regarding claim 25, as mentioned previously, a packet can be sent from device 221 to device 222.

23. Regarding claim 26, the functions of the MND also include being a multicast detector and facilitator. For example, the MND 228 is configured to distribute messages along the orange and yellow VLAN segments and generates a second MVLAN ID (e.g. orange-yellow) associated with the corresponding orange and yellow VLAN designation. Gleeson et al. does not expressly mention a bridging capability between the routers and the switches; however, it is well-known in the art that a connection between different layers of communication need to be bridged in order for communication to take place. It would have been obvious to a person of ordinary skill in the art at the time of the invention to bridge between the routers and the switches in Gleeson et al.. One would have been motivated to do this because a bridge would have facilitated the communication between the router and the switch of Gleeson et al., making the transfer of information more efficient.

Art Unit: 2662

24. Regarding claim 27, it is well-known that a bridge can act as a filter and not select certain packets to pass. It would have been obvious to include this feature into modified Gleeson et al. system. One would have been motivated to do this because certain packets should not be transmitted in order to save on bandwidth.

25. Regarding claims 28, 29, and 30, the modified version of the switch in Gleeson et al. would include the ability to bridge the identified packets through a plurality of ports in the subset of ports.

26. Regarding claim 31, Gleeson et al. discloses supporting DVMRP, PIM-SM, and PIM-DM. See col. 9, lines 23-26. With multiple protocols, it is inherent that the switch is response to these protocols.

27. Regarding claims 32 and 33, Gleeson et al. discloses distributing multicast messages that include control and routing related packets. The group of packets identified also configured for all its VLANs. See col. 9, lines 18-19.

28. Regarding claim 34, Gleeson et al. discloses the MND, which uses the multicast controller 306. It also routes at least IP related packets between ports of the same VLAN.

29. Regarding claims 35, 36, and 37, the modified version of Gleeson et al. discloses that the bridging capabilities will prevent certain packets from being forwarded, irrespective of their destination addresses.

30. Regarding claim 38, as shown in Fig. 2A, the MND 226 is a type of layer-3 switch that directs packets to either the R, G, or B VLAN interfaces. The MND 226 does not have an associated IP router interface. The distribution of messages also uses the MAC address derived from the IP destination address. See col. 12, lines 36-44.

Art Unit: 2662

31. Regarding claim 39, as mentioned previously, the MND 226 is capable of handling IP packets routed in layer-3.

32. Regarding claim 40, Gleeson et al. does not expressly disclose generating IP packets at a higher layer in the switch; however, it is well-known that higher levels than level-3 can generate IP packets. It would have been obvious to a person of ordinary skill in the art at the time of the invention to include packets generated at higher levels in the system disclosed by Gleeson et al.. One would have been motivated to do this because this would simplify some of the routing processes that otherwise would have to take place.

33. Regarding claims 41 and 42, Gleeson et al. discloses that packets like DVMRP, PIM-SM, and PIM-DM can be sent (packets of a routing protocol). See col. 9, lines 23-26.

34. Regarding claim 43, Gleeson et al. discloses that leave and join packets can be sent (IP multicast control packets). See col. 9, line 65.

35. Regarding claim 45, Gleeson et al. discloses receiving frame 402a at a switch and converting to frame 610 in Fig. 6. See also col. 12, line 40, and col. 13, line 52. The switch may, but doesn't have to, decrement the TTL value indicating that the switch may not participate or disable decrementing the TTL value that would result in maintaining the same value at a non-participating node (forwarding the packet with the changed MAC address but with the same TTL value). See col. 13, lines 52-62.

36. Regarding claim 46, Gleeson et al. discloses receiving a packet 402a at switch 220 of Fig. 2A comprising an IP multicast packet generated by Red VLAN entity 27. See also Fig. 4A, and col. 12, lines 21-32.

Art Unit: 2662

37. Regarding claim 47, Gleeson et al. discloses forwarding the packet received from Red VLAN entity 27 with the Red VLAN onto ports 3 and 5 of switch 220 in Fig. 2A. See col. 12, lines 45-65.

38. Claim 49 rejected under 35 U.S.C. 103(a) as being unpatentable over Gleeson et al. in view of Virgile, further in view of Oguchi et al. (US 6,625,685) and in light of the rejection to claim 48. Gleeson et al. discloses a switch according which can operate in a first mode, but Gleeson et al. does not expressly disclose where the switch can operate in a second mode in which interfaces are identified only by a VLAN. Oguchi et al. discloses a switch with a point-to-point type interface. See col. 9, lines 18-19. The routing table operates by identifying VLAN only. See Figs 4 and 5. It would have been obvious to a person of ordinary skill at the time of the invention to incorporate the feature taught by Oguchi et al. in the switching device of Gleeson et al.. One would have been motivated to do this because cost could be reduced by removing circuitry that would no longer be needed.

Response to Arguments

39. Applicant's arguments with respect to claims 1-17, 20-43, and 45-49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy Lee whose telephone number is (703)305-7349. The examiner can normally be reached on M-F, 9-5.

Art Unit: 2662

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (703)305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TLL
Timothy Lee
May 14, 2004



HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600